

JP10149760 A
FIELD EMISSION TYPE COLD
CATHODE APPARATUS,
MANUFACTURE THEREOF, AND
VACUUM MICROAPPARATUS
TOSHIBA CORP

Abstract:

PROBLEM TO BE SOLVED: To provide a field emission type cold cathode apparatus having an even field emission property and high field emission efficiency and capable of being driven at low voltage.

SOLUTION: This field emission type cold cathode apparatus comprises a supporting substrate 12 and a

plurality of emitters 14 formed on the supporting substrate 12 to emit electrons. Each emitter 14 is constituted of a plurality of carbon tubes 16 basically made of strings of 6-member carbon rings. Not than 70% of the total carbon tube 16 has 30nm or smaller diameter. The aspect ratio, which is the ratio of the height to the bottom part diameter, of the carbon tubes 16 composing the emitters 14 is set to be not less than 3 and not higher than 1×10^6 , preferably not less than 3 and not higher than 1×10^3 . The cycle of the 3-member carbon rings of the carbon tubes 16 is 0.426nm or 0.738nm or integer times as long as these values.

[no drawing]

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